STRENGTHENING SMALL BUSINESS PARTICIPATION IN DEPARTMENT OF DEFENSE EXTRAMURAL RESEARCH AND DEVELOPMENT

Bernard K. Dennis, Defense Technical Information Center

ABSTRACT

This paper discusses steps taken by the Defense Technical Information Center (DTIC) to strengthen small business participation in DoD extramural R&D, indicates a need for explicit attention to information transfer requirements by R&D contract administrators and concludes with a suggestion to the DoD contract administration community. Many factors impede small business efforts to do R&D business with the federal government. These run the gamut from federal procurement policies, regulations, and procedures; beliefs, biases, and practices of federal R&D people and their management systems; and the formidable advantages of bigness in the federal marketplace. Information transfer issues exacerbate the impacts of all the above and further reduce small business capabilities to compete for and to perform federal agency--particularly DoD--R&D projects. The studies and testimony leading to the Small Business Innovation Development Act of 1982 indicated a need for change in federal agency approaches to R&D contracting. DTIC's approach has been to mitigate the impacts of information transfer barriers on small R&D firm efforts to do business with DoD.

INTRODUCTION

The concept of helping small and disadvantaged firms obtain a fair share of federal government business has been around for about a half century and institutionalized through various legislative, regulatory, procedural, and organizational infrastructures in federal agencies. Only within the past few years has particular attention to the capabilities of small research and development (R&D) business begun to emerge. The most recent and widely publicized attempt to strengthen small business participation in the federal contract R&D arena is the Small Business Development Act of 1982 (1) and the resulting Small Business Innovation Research (SBIR) programs now in progress in 11 federal agencies.

Much has been written about the declining rate of productivity increase in the United States over the past decade. Our rate has been well below that of all leading industrial nations, particularly Germany and Japan. Although this relative decline in our productivity is attributed to many factors, a major one certainly is the slowdown experienced in technological innovation. Recognizing that small R&D firms historically have excelled at technological innovation, Congress perceived that R&D work should be encouraged within the small business community and passed the Small Business Innovation Development Act of 1982 by overwhelming majorities. In April 1981, Senators Rudman and Weicker introduced S.881, which later passed the Senate by a vote of 90 to 0. The House's companion bill passed by a vote of 353 to 57. President Reagan signed the Act as Public Law 97-219 on July 22, 1982, and it became effective on the first of the following October.

It is well known that technological innovation creates new jobs, increases productivity, enhances the competitiveness of products in foreign markets and stimulates economic growth. Studies identified in the legislative history of the 1982 Act (2) indicate that small R&D firms produce 24 times as many innovations per R&D dollar as large firms and four times as many as medium-sized companies. Further, small firms accounted for 87 percent of new jobs in the U.S. between 1969 and 1976. Also, the cost of an R&D scientist or engineer in small businesses is one-half that in large companies. Yet, as pointed out in the Act's history, small firms get four percent of the federal R&D dollars while large companies receive the lion's share. Of $15 billion in contract research, 70 large firms got 80 percent, 20 percent of which went to only four large companies. These figures helped Congress and the President see the need for change. Since the federal government funds about half of the nation's R&D, it can have a significant impact on the efficiency and effectiveness of the country's R&D output and hence its technological innovation. The Defense Department accounts for over half of the federal government's R&D. It is essential that its R&D dollars be used optimally.

Although numerous studies have shown small businesses to be our country's most efficient and productive source of innovations, of the $12.96 billion in DoD R&D contract awards to U.S. businesses in FY 1982, only $733 million, or 5.7 percent, went to small R&D firms. In overall DoD awards of $102.5 billion to U.S. business firms that year, however, $20.1 billion was awarded in prime contracts to small firms and another $13.4 billion in subcontracts. In other words, one of every three dollars in total awards went to small businesses, but in R&D contracts only one dollar out of 20 went to small R&D firms. (3)

The purposes of the 1982 Act are to: (1) stimulate technological innovation; (2) use small business to meet federal R&D needs; (3) increase private sector commercialization of innovations derived from federal R&D; and (4) foster and encourage minority and disadvantaged participation in technological innovation.

The Act requires all federal agencies to establish Small Business Innovation Research (SBIR) programs (as they are commonly called) if their FY 1982 extramural R&D budgets exceeded $100 million. There are 11 agencies meeting this requirement. The law specifies a percentage of the budget that must be allocated to the SBIR program in each agency beginning with 0.1 percent for FY 1983 and growing to 1.25 percent in FY 1987. Based on budget projections, which may change in accordance with actual appropriations each year, DoD's SBIR program projections start at around $16.7 million in FY 1983 and grow to about $204 million in FY 1987. (3)

As required by the 1982 Act, the DoD SBIR program provides for three phases of R&D work. Phase I contracts typically require 6 months and from one-half to one manyear of effort. Their purpose is to contribute to proving the feasibility of innovative approaches or concepts. Phase II contracts will provide for from one to two years of R&D to develop the approach or concept fully. Phase III development or production is intended to proceed on private funding in the commercial sector. At that point, DoD may become a customer.

Clearly, there is a strong potential for significant sociopolitical and economic as well as defense benefits to the nation from strengthening small business contributions to DoD's technological base. All feasible steps toward that end should be taken. In the course of their efforts in this area, DoD SBIR program management in the Office of the Under Secretary of Defense for Research and Engineering and the Office of Small and Disadvantaged Business Utilization (SADBU) in the Office of the Secretary of Defense recognized that small R&D firms unaccustomed to doing business with DoD would probably be hindered by knowing little about R&D already done or in progress by DoD laboratories, research centers, and contractors. Also, small business people would not likely know where to turn for such information. Yet, these people would need to know about and have access to such available information if they were to respond successfully to DoD SBIR solicitations and perform the awarded work. The Defense Technical Information Center (DTIC) was asked to do something about it.

DTIC'S INFORMATION TRANSFER SUPPORT PROGRAM FOR SMALL R&D BUSINESS

As the central repository of technical reports that result from DoD-funded R&D, DTIC maintains some 1.5 million such documents in its files. Also, DTIC handles summaries of DoD R&D projects recently completed or still in progress. There are about 162,000 of these on hand. Several services inform the defense R&D community that this information is available and provide access to it. An on-line retrieval system with over 600 terminals at sites throughout the country provides access for thousands of DTIC users. In addition, DTIC has a number of information transfer and computer system specialists doing R&D in applied information science and technology to develop a fuller understanding of the DoD information transfer process. They identify needs and develop advances in the state-of-the-art to facilitate more efficient and effective information transfer in DoD and its defense community.

Prior to its involvement with the DoD SBIR program, DTIC had initiated technical information transfer support to the DoD SADBU program and had been studying small R&D firm information transfer issues. A key problem area confronting small businesses attempting to compete for federal R&D business involves identifying R&D needs of federal programs and determining if, how, by whom, and when contractual assistance will be sought to address which needs. An integral part of this information transfer problem is knowing about, locating, and getting access to available scientific and technical information and contacts required to develop the understanding, concepts, and approaches needed to prepare and market proposals to address identified needs. The requirement for information transfer assistance continues throughout the performance of R&D contracts.

Through their large technical staffs and internal technical information services, larger companies have a tremendous scientific and technical information acquisition advantage. Size also provides significant advantages in making and cultivating contacts essential to a firm's efforts to market its capabilities in the federal marketplace.

DTIC's fundamental mission is to advocate and facilitate better informed decisions throughout the total process of planning, developing, disseminating, using, and evaluating the use of technical information to address DoD programmatic objectives. Contract R&D is a primary part of this process. Considering the potential sociopolitical and economic benefits

to the nation, as well as needed innovative contributions to our defense capabilities, and recognizing the special needs of small R&D firms for information transfer support, DTIC is giving particular attention to the needs and priorities of DoD's SADBU and SBIR programs and their small business constituents.

INFORMATION TRANSFER SUPPORT TO DoD SADBU PROGRAM

A DTIC survey of SADBU specialists located in Defense Logistics Agency (DLA) Defense Contract Administration Service Regions (DCASRs) around the country indicated that these people have need for information transfer support in their R&D-related outreach, referral, and procurement functions. They also need a system to facilitate rapid communication among themselves as specific issues arise. They can then benefit from each other's knowledge, experience, and contacts. In addition, they need training in the information transfer process and related techniques. Although not generally understood, the basic role of SADBU specialists is to function as information transfer agents. Their job is to advocate small business interests in the DoD acquisition process. They are supposed to help link small firms to specific DoD contract opportunities. The SADBU program has turned in a credible performance regarding the share of DoD overall contracting going to small business. However, there seems to be considerable opportunity for improvement regarding DoD R&D contracting done with small firms.

In working with the SADBU people, it became clear that their primary emphasis has been on the legal, regulatory, and procedural issues connected with the acquisition of physical commodities and services with considerably less attention paid to the structure and needs of DoD's R&D programs and the small R&D business sector. For example, procurement conferences generally seem to be less useful to small R&D firms than to others. Identifying small R&D businesses for mailings presents a problem. Referring representatives from small R&D companies to appropriate DoD R&D people to discuss technical concepts, needs, and issues poses yet another information transfer problem.

To help resolve such information transfer problems, DTIC has worked with the DLA Headquarters SADBU Office to set up a two-way communication linkage between the SADBU program and the Federal Laboratory Consortium for Technology Transfer (FLC). FLC has representatives concerned with identifying technologies available or under development in 300 federal laboratories, 60 of which are in DoD. FLC's objective is to transfer technology developed with federal funds to state and local governments and to the private sector for use in meeting other societal needs. FLC representatives know what is going on in the laboratories they represent; they also conduct outreach efforts to identify targets for available technology. Therefore, they are excellent sources for SADBU specialists to contact in their outreach and referral functions related to the interests of small R&D firms. On the other hand, FLC sees their SADBU connection as a means for focusing their efforts on small business needs for technology.

Other steps to strengthen DoD SADBU support to small R&D firms through increased attention to information transfer issues are in progress or planned. For example, a DoD Washington, DC, area small R&D business technical assistance center is currently being considered. This center would provide counseling and guidance related to marketing and other business activities as well as technical information transfer assistance.

INFORMATION TRANSFER SUPPORT TO DoD SBIR PROGRAM

By the time this paper is presented, the second DoD SBIR program Phase I solicitation will be in progress. Distribution of the solicitation brochure is planned for 14 Oct 83. The solicitation is scheduled to close 12 Jan 84. It is expected that small business interest in the forthcoming solicitation will exceed that experienced during the first which was held from 15 Mar to 31 May 83.

The first DoD SBIR program solicitation, number 83.1, was sent to 14,000 firms who had registered with the Small Business Administration (SBA) to receive SBIR solicitations from participating federal agencies. In addition, and resulting from announcements in the Commerce Business Daily and an SBA presolicitation brochure, DTIC provided another 7,000 copies to small business requesters. The SBA mailing list now includes over 30,000 firms and continues to grow. Further, the DoD SBIR set-aside of 0.1 percent of the extramural R&D budget in FY 1983 becomes 0.3 percent in FY 1984. SBIR funds grow from approximately $16 million to over $40 million.

To provide assistance to small R&D firms preparing proposals in response to the DoD SBIR program solicitation, DTIC obtained appropriate clearance to provide unclassified and unlimited distribution information on the

solicitation research topics. An offer to provide technical information assistance to SBIR proposers was presented in the DoD solicitation. To focus attention on the offer, a reminder note was attached to each of the 7,000 copies of the solicitation brochure requested from DTIC. As a result of these outreach steps, 910 small businesses contacted DTIC for assistance. A technical information proposal package containing a technical report bibliography, summaries of DoD-funded research projects in progress, and other relevant information sources (including DoD Information Analysis Centers) was prepared for each of the 400 DoD solicitation research topics. Nearly 3,800 of these packages were provided in response to requests from the SBIR proposers during the solicitation period. In addition, nearly 3,000 technical reports identified by the bibliographies were provided.

Beyond technical information assistance to support SBIR proposal preparation, DTIC also referred numerous small business requesters to SADBU specialists in DLA DCASRs around the country on various proposal preparation issues. As a further step, DTIC provided DoD Potential Contractor Program (PCP) information and contacts to all requesters. PCPs, which have been set up in the Army, Navy, Air Force and the Defense Advanced Research Projects Agency (DARPA), provide a means for qualified firms currently without DoD contracts to obtain access to planning and technical information on the sponsoring service or agency R&D requirements and to DTIC services. This type of information is key to a firm's efforts to market its R&D capabilities to DoD.

Over 2,900 proposals were received by the Army, Navy, Air Force, DARPA, and the Defense Nuclear Agency in response to DoD's first SBIR program Phase I solicitation. Although the number of resulting awards is not yet known, DTIC is already identifying how best to provide long-range SBIR program support.

CONTINUING DTIC SUPPORT TO DoD'S SBIR PROGRAM

DTIC is now studying its first SBIR Phase I solicitation support experience and preparing for the next. Concurrently, planning is in progress to identify the firms that receive contracts and ensure that they are promptly registered as DTIC full-service users. This will require the cooperation of appropriate contract administration officials, SBIR program management, and principal investigators of the SBIR contractors. Phase I contracts typically require only 6 months to complete; therefore, registration procedures and coordination must be implemented as quickly as feasible.

DTIC is also having the FY 83 solicitation topic authors identify technical information sources which would be particularly useful to new SBIR contractors in getting off to sound starts on their Phase I projects. Such sources may include technical reports, journal articles, names of experts, centers of expertise, etc. DTIC will organize this material and provide it to appropriate SBIR contractors immediately following awards.

DTIC services to SBIR contractors will continue through Phase I and Phase II R&D work and, in some cases, may be needed to support Phase III efforts. Concurrently, new Phase I solicitations and projects will be supported each year throughout the life of the Act.

INFORMATION TRANSFER RESPONSIBILITIES OF CONTRACT ADMINISTRATORS

Historically, contract administration people have given little explicit and consistent attention to information transfer issues inherent in the R&D work called for by the contracts they administer. Yet these issues impact significantly on the cost-effectiveness of the contract information deliverables. One such issue area involves contractor access to and use of R&D results already paid for by DoD and available from DTIC. DoD R&D contracts should require the contractors to register with DTIC and use its services. Further, contract administrators can take steps to ensure that a work unit summary (DD 1498) is prepared promptly for each R&D contract and input to the DTIC Work Unit Information System. R&D contract administrators also can ensure that technical reports and other technical information deliverables are specified appropriately and consistently in the contracts they administer and can facilitate systematic input of such R&D outputs into DTIC collections for wide dissemination and use.

History also shows that R&D people address their information transfer responsibilities inconsistently and with varying degrees of effectiveness. Appropriate provisions regarding information transfer requirements in the contract administration phase of R&D can add a degree of consistency needed to increase the availability and use of R&D results and thus their cost-effectiveness.

There are additional ways in which contract administration people can impact beneficially on the planning, development, dissemination, and use of technical information needed to support better informed DoD technical decisions. Perhaps a DoD-wide program is needed to support R&D contract administration people in meeting their information transfer-related responsibilities. DTIC would welcome the opportunity to advise and otherwise assist such an effort.

REFERENCES

(1) Small Business Innovation Development Act of 1982, P.L. 97-219, July 22, 1982.

(2) Legislative History, P.L. 97-219, Small Business Innovation Development Act of 1982, Senate Report (Small Business Committee) No. 97-194, September 25, 1981 (to accompany S.881).

(3) Presentation by Mary Ann Gilleece, Deputy Under Secretary of Defense for Acquisition Management, on "The Small Business Innovation Development Act of 1982 and Department of Defense Small Business Research Programs" before the National Contract Management Association (NOVA Chapter), Arlington, VA, May 25, 1983.